Vol. 6, No.08; 2022

ISSN: 2456-7760

How the Covid-19 Pandemic Affects the Prices of Strategic Commodities in Indonesia

Widya Syafitri¹, Nazamuddin², Sartiyah³

¹Syiah Kuala University, Department of Economics Faculty of Economic and Business, Banda Aceh, Indonesia

²Syiah Kuala University, Department of Economics Faculty of Economic and Business, Banda Aceh, Indonesia

³Syiah Kuala University, Department of Economics Faculty of Economic and Business, Banda Aceh, Indonesia

doi: 10.51505/ijebmr.2022.6822

URL: http://dx.doi.org/10.51505/ijebmr.2022.6822

Abstract

This study aims to examine volatility of strategic food commodities price in Indonesia before and during Covid-19 pandemic and to analyze the influence of GRDP and Covid-19 pandemic on prices of strategic food commodities price in Indonesia. Data used is panel data with time series data for quarter 2018-2021 cross section of 34 provinces in Indonesia and uses variation analysis method and panel regression. The results of the analysis show that prices of agricultural commodities, garlic, red chilies, and chicken were more varied before pandemic than during Covid-19 pandemic. Price of cayenne pepper, shallots, beef, and chicken eggs are more varied during pandemic than before Covid-19 pandemic. Prices of industrial commodities, cooking oil and sugar are more varied during pandemic than before Covid-19 pandemic, while price of rice was stable. The result of Random Effect Model regression found that Covid-19 pandemic has positive effect on price of agriculture and industrial strategic food commodities.

Keywords: coefficient of variation, Covid-19 pandemic, panel data regression, strategic food commodity prices

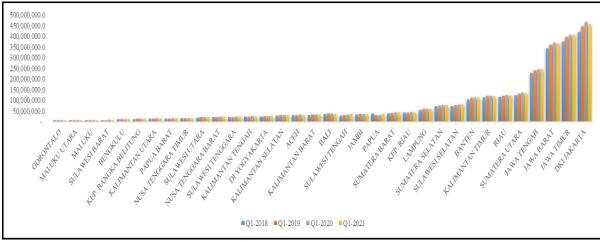
1. Introduction

The number of confirmed Covid-19 infection cases of in Indonesia from March 2020 to January 31, 2022 reached 4,353,370 cases with the number of deaths reaching 144,320 people (Ministry of Health, 2021). There has been a considerable impact of the pandemic on the economy and standard of living. Indonesia's economic growth in 2020 was negative at 2.07 percent (Statistics Indonesia, 2022). A drastic slowdown occured during the second quarter of 2020 when the number of confirmed cases of Covid-19 rose sharply. The economy dropped by 4.19 percent in 2020 (Statistics Indonesia, 2022c). It was a sharp deviation from the targeted 5.4 to 6.0 percent for the 2020-2024 medium term target (Ministry of National Development Planning, 2020).

Vol. 6, No.08; 2022

ISSN: 2456-7760

The quarterly GRP at market prices shows an increase from the first quarter of 2018 to the fourth quarter of 2021. However, from the first to the second quarters of 2020 it shows a fall in both GRDP at constant prices and market prices (Statistic Indonesia, 2022d) during which the pandemic reached its peak. It implies that the decline was partly due to price changes. In addition, the average GRDP of thirty-four Indonesian provinces increased from the first quarter of 2018 to 2021 (see Figure 1). However, due to the Covid-19 pandemic that struct Indonesia in March 2020, GRDP declined in the first quarter of 2021. This is especially noticeable five largest provinces, namely DKI Jakarta, East Java, West Java, Central Java, and North Sumatra. It indicates a decrease in economic activity which is attributable to people movement and outside the home activity restrictions.



Source: BPS

Figure 1: Gross Regional Domestic Product of 34 Indonesian provinces at 2010 constant prices, quarter-on-quarter 2018-2021 (million rupiahs)

As a consequence of the Covid-19 pandemic, the incidence of unemployment and reduced working hours increased. It is partly due to government imposed restrictions on the movement of people. Some businesses became out of business and closed down due to supply chain disruptions. The overall impact was a decrease in income and hence the demand for goods and services fell sharply and it may lead to a decrease in prices.

The inflation rate in Indonesia shows a different pattern during 2020 compared with the previous years. The inflation rate usually rises during the year-end periods of Ramadan and muslim holidays due to seasonal increases in prices. However, during 2020 there was an anomaly where there was instead a deflation rate of 0.09 percent in April and 0.50 percent in May. This may occur because of the decline of economic activities, and hence purchasing power during the pandemic (Ministry of Trade, 2020a). The inflation rate decreased by 0.2 in the third quarter of 2020. However, it rose again in the fourth quarter of 2020 and the first quarter of 2021 by 0.8 percent and 0.44 percent respectively (Statistics Indonesia, 2022a). This may be attributable to the increase in the demand for goods and services in a response to stimulus packages from the government, while due to supply chain disruptions the supply drops. There has been a switch in

Vol. 6, No.08; 2022

ISSN: 2456-7760

the behavior of households in where they tend to hoard food, health equipment and self-care items. This may result in the increase in prices of those goods, as reflected in increased prices of food, beverage, and tobacco as well as general prices (Statistics Indonesia, 2022b). During the January-November 2020 period, the demand for some food commodities have increased. The commodities that experienced price increases were rice, granulated sugar, onions, wheat flour, cooking oil, and beef. Meanwhile, other food commodities' prices tend to be stable and some even experience price deflation such as chili peppers and chicken meat (Ministry of Trade, 2020a).

The scarcity of commodities in the market and the high demand cause commodity prices to rise. High volatility of price movements lead to inflation (Von Braun & Tadesse, 2012), especially for developing countries with the majority falls with the low-income group. Staple food price stability at the producer and consumer levels is in accordance with the government strategy to control the prices of stratetegic commodities by setting reference prices. Based on the Regulation of the Minister of Trade No.07 of 2020 the control also includes sugar, cooking oil, onions, beef, chicken meat, and chicken eggs (Ministry of Trade, 2020b).

Rice, onions, garlic, red chili peppers, cayenne pepper, beef, chicken meat races, chicken eggs, granulated sugar, and cooking oil are among the top fifteen consumption goods that share the highest weights in the volatile price inflation (Statistics Indonesia, 2019). Therefore, meeting the demand for those staple food commodities is essential. They are strategic food commodities where their prices reflect the presence or absence of economic uncertainty as the effect of the Covid-19 pandemic. Transportation sector is directly impacted by the Covid-19 pandemic. Its disruption affects changes in the demand for and supply of strategic food commodities. The Covid-19 lockdowns disrupted commodity distribution networks and in turn lowered regional economic growth (World Bank, 2020).

Like any other economic shock, the Covid-19 pandemic shock has deviated the world economy from its trackt (International Monetary Fund, 2022). Many countries imposed restrictions on the movement of people. It disrupted supply and demand of commodities. As a result, the global economic growth was predicted to slow from 5.9 percent in 2021 to 4.4 percent in 2022, largely due to a extraordinary drop in commodity prices. At the micro level, the Covid-19 pandemic has disrupted goods distribution and commodity price volatility. At the macro level, it has caused the fiscal and monetary stability that may lead to an increase national debt. In Indonesia, the Covid-19 pandemic has impacted almost all sectors of the Indonesian economy, especially the transportation sector, tourism sector, trade sector, and health sector. Households are the worst affected by the Covid-19 pandemic (Susilawati et al., 2020). At the regional level, the Covid-19 pandemic has slowed down economic growth, raised unemployment, poverty, and income inequality. The Indonesian government imposition of the large-scale social restrictions has caused severe impacts, most notably, to the provinces with big population and high population mobility, namely the provinces in the Java island (Rahayu & Muharam, 2021).

Strategic commodities are defined as the goods that can be stored for a relatively long period, easily traded, and support development, as well as enhance the general welfare of the society.

Vol. 6, No.08; 2022

ISSN: 2456-7760

Meanwhile strategic food commodities are the food commodities that have a significant contribution to inflation, especially those with high price volatility. In Indonesia, there are ten main strategic food commodities regularly monitored and published at the Strategic Food Price Information Center. Those commodities are rice, onions, garlic, red pepper, cayenne pepper, beef, chicken meat, chicken eggs, granulated sugar and cooking oil (Strategic Food Price Information Center, 2022). Strategic food prices change in response to changes in exogenous variables such as wage levels, capital costs, and income (Pindyck, 2013).

The Indonesian minister of agriculture (Ministry of Agriculture, 2020) assigns a group of commodities to be controlled and included in the government's targets, consisting of rice, granulated sugar, beef, chili (red and cayenne) and onions. The government sets the reference buying and selling prices for those commodities as an effort to maintain commodity price stability. Price volatility is indicated by fluctuations in commodity prices from time to time (Mahdi & Khaddafi, 2020). In addition, the minister of trade through Regulation No.07 of 2020 also includes sugar, cooking oil, onions, beef, chicken meat, and chicken eggs in the list of basic food commodities. Sumaryono (2009) finds that among the food commodities that have a high share in the total household food consumption are rice, red pepper, onions, chicken eggs, granulated sugar, and cooking oil, and therefore examining how their prices respond to the Covid-19 pandemic is crucial.

Several recent studies have investigated the impact of Covid-19 on the price of strategic food commodities (Singh et al., 2020, Borgards et al., 2021, Beckman et al., 2021, Umar et al., 2021, dan Cariappa et al., 2021. Some studies even found a substantial increase in the price of food commodities that, to a certain degree, leads to food hoarding (Singh et al., 2020, Borgards et al., 2021, and Cariappa et al., 2021). Meanwhile, studies on Indonesia are scarce and limited to a few strategic food commodities (Nendissa et al., 2020, Medah 2020, Rahmanta & Maryunianta 2020, Wulandari 2020, Pricilia, 2021, and Zahraturrahmi et al., 2021). They used descriptive analyses which may not capable of providing strong inferences about causal relationships. This study provides a different perspective of the relationship between the prices of strategic food commodities and the Covid-19 pandemic. The significance of this study lies in the focus on ten strategic food commodity prices underexplored in the prior literature. Those commodities are deemed to play the most important role for sustaining the normal lives of the society in the midst of the Covid-19 pandemic. This study aims to examine volatility of strategic food commodities price in Indonesia before and during Covid-19 pandemic and to analyze the influence of GRDP and Covid-19 pandemic on prices of strategic food commodities price in Indonesia. The Covid-19 pandemic can have a positive effect on the prices of strategic food commodities in Indonesia.

2. Method

The study used monthly data for thirty-four provinces for the period from 2018Q1 to 2021Q4 on retail prices of strategic food commodities, i.e., rice, onions, garlic, red pepper, cayenne pepper, beef, chicken meat, chicken eggs, granulated sugar, and cooking oil. The data was sourced from the national Strategic Food Price Information Center and the Statistics Indonesia. We divided prices into two groups, namely the prices of agricultural strategic food commodities and the prices of industrial strategic food commodities. To turn the data into a quarterly panel, we

Vol. 6, No.08; 2022

ISSN: 2456-7760

converted the monthly prices into quarterly data. Then we calculated the average commodity price per group for each quarter and data on the basis of Gross Regional Domestic Product at 2010 prices.

We transformed the data into natural logarithms to smooth them and for simplicity of the interpretation of the results. The use of natural logarithms due to changes in natural logarithms is almost equal to the percentage change in the original value (Nau, 2014). To take into account the effect the Covid-19 pandemic, we included a dummy with the value of 0 for observations before the pandemic, and 1 for observations during the outbreak.

2.1 Coefficient of Variation

The study used the coefficient of variation method and panel data regression. We used the variation coefficient method to identify the price stability of strategic food commodities before and during the Covid-19 pandemic outbreak. We compared the coefficients of variation between the standard deviation and the average value of a variable. Following Setiawan (2012) we formulate the Coefficient of Variation as follows:

$$CV = \frac{s}{\bar{x}} \tag{1}$$

S dan \bar{x} we obtain from:

$$S = \sqrt{S^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}} \operatorname{dan}\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$
(2)

where CV is Coefficient of Variation, S is the standard deviation, \bar{x} is the average value of the variable, and x_i is the value of x at i. If the CV value from the data in group A is greater than the CV value from the data group B, it suggests that the data in group A is more varied or volatile than group B data.

2.1 Panel Data Regression

The panel data regression model used in this study can be described as follows:

$$LPASC_{i,t} = \alpha + \beta_1 LGRDP_{i,t} + \beta_2 DCov_{i,t} + u_{i,t}$$
(3)

$$LPISC_{i,t} = \alpha + \beta_1 LGRDP_{i,t} + \beta_2 DCov_{i,t} + u_{i,t}$$
(4)

where $PASC_{i,t}$ is the average price of agricultural strategic food commodities in province *i* at quarter *t* in percent, $PISC_{i,t}$ is the average price of industrial strategic food commodities in province *i* at quarter *t* in percent, $GRDP_{i,t}$ is the GRDP in province *i* at quarter *t* in percent, $DCov_{i,t}$ is the Covid-19 dummy, α is the intercept, $u_{i,t}$ is the error term.

We selected the best fit model among *Common Effect Model* (CEM), *Fixed Effect Model* (FEM), dan *Random Effect Model* (REM) based *Chow Test*, *Hausman Test*, and *Langrange-Multiplier Test* (Baltagi, 2005).

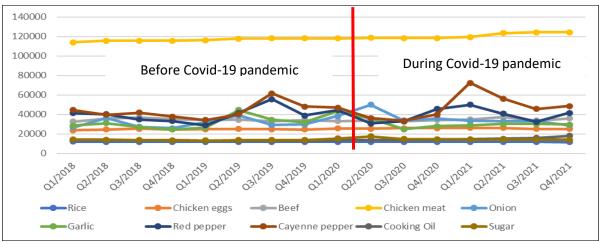
Vol. 6, No.08; 2022

ISSN: 2456-7760

3. Results and Discussion

3.1 An overview of food prices

We make the comparison of two data conditions, namely before and during the Covid-19 pandemic, to examine how the strategic commodity prices behave before and during the Covid-19 pandemic outbreak. In Figure 1 we show the movement of 10 strategic food commodities before and during the outbreak, and in Table 1 we show the changes in their coefficients of variations.



Source: Strategic Food Price Information Center

Figure 2. Average retail price of 10 strategic food commodities, 2018Q1-2021Q4, rupiah per kilogram

The prices of most strategic food commodities fluctute from the first quarter of 2018 to the 4th quarter of 2021. They mainly occurred after the Covid-19 outbreak in 2020Q1. Only the prices of rice appear to be stable. The price fluctuations basic foodstuffs have a significant impact on the living standards of low-income people.

	Commodities (Pe	ercent)		
Commodity	Before Pandemi	During Pandemi		
Commodity	(Q1/2018 s.d Q1/2020)	(Q2/2020 s.d Q4/2021)		
Onions	16.54	18.95		
Garlic	21.59	14.43		
Red pepper	18.99	18.91		
Cayenne pepper	16.17	29.18		
Chicken meat	4.51	3.31		
Beef	1.53	2.24		
Chicken eggs	2.77	3.35		
Source: Strategic Food Price Information Center				

Table 1. The Coefficient of Variation of Prices of Agricultural Strategic Food	
Commodities (Percent)	

Vol. 6, No.08; 2022

ISSN: 2456-7760

The Coefficient of Variation value of Prices of Agricultural Strategic Food Commodities, shows that there are significant differences in the prices of garlic, red pepper, and chicken meat. They are more varied before than during the Covid-19 outbreak. Meanwhile, the price of cayenne pepper, onion, beef, and chicken eggs is more varied during the outbreak than before.

The Coefficient of Variation value of chicken meat, beef, and chicken eggs is smaller than onions, garlic, red pepper, and cayenne pepper. Before the pandemic, the highest Coefficient of Variation value was garlic. It implies that garlic price was more volatile. However, during the outbreak there was a decrease in price variations although it is still volatile. The average price of garlic, before and after the Covid-19 outbreak exceeded the set highest retail price of garlic in 2019 of Rp 32,000 / kg (Prasetyo, 2019). Highest retail price of garlic is not included in the list of reference price list set by the minister of trade. It suggests that a commodity's price tends to be volatile if unregulated.

Both the annual production of garlic in Indonesia increased more than double from 2018 to 2020. The amount of garlic production in Indonesia shows a fluctuating trend during the 2018-2020 period, namely 39,302 tons (2018) increased to 88,816 tons (2019), but it decreased to 81,805 tons in 2020 (Statistics Indonesia, 2021a). Meanwhile, the weekly average per capita garlic consumption increased only slightly from 0.330 ounces in 2018 to 0.346 ounces 2019), then decreased to 0.320 ounces in 2020 (Statistics Indonesia, 2021b). The volatility of prices is due to obstacles to the distribution of garlic from producers to merchants and to consumers as a result of the implementation of government policies in tackling the spread of Covid-19 such as restrictions on land transportation access, and large-scale social restriction.

The Coefficient of Variation value of red chili peppers before the Covid-19 outbreak is higher than during outbreak. This indicates that before the pandemic the price of red chili peppers was more volatile. The red chili pepper production in Indonesia shows an increasing trend (Statistics Indonesia, 2021a), while the average consumption per capita per week fluctuated (Statistics Indonesia, 2021b). The Coefficient of Variation value of cayenne pepper and onions before the pandemic is smaller than during, indicating that after the outbreak the prices of cayenne pepper and onions are more volatile.

The price of chicken meat commodities were stable amid the Covid-19 pandemic. The prices of beef and chicken eggs were volatile during the Covid-19 pandemic and their prices even hit above the highest retail price in 2020, at Rp 105,000 / kg for beef and Rp 24,000 / kg for chicken eggs (Ministry of Trade, 2020). The prices of these two commodities have a cyclical pattern where prices rise during the month of Ramadan, Eid al-Fitr, and Christmas Day. They respond more to those yearly holiday events rather than to the shock of the Covid-19 pandemic.

Vol. 6, No.08; 2022

ISSN: 2456-7760

Table 2. The Coefficient of Variation of Prices of Industrial Strategic Food Commodities

		(reicent)		
Commodity	Before	Pandemi	During	Pandemi
Commodity	(Q1/2018 s.d Q1/2020)		(Q2/2020 s.d Q4/2021)	
Rice	0.76		0.67	
Cooking	2.16		8.83	
Oil	2.10		0.03	
Sugar	2.85		8.79	

Source: Strategic Food Price Information Center

In Table 2 we show the coefficient of variation value of Prices of Industrial Strategic Food Commodities. Rice prices did not show a significant difference between before and during the outbreak. Hence, rice prices were relatively stable. However, the prices of cooking oil and sugar were more varied during the Covid-19 pandemic than before.

The price of rice before and during the outbreak relatively stable compared to cooking oil and granulated sugar. The stability was supported by an increase in rice production in 2020. The stability of rice prices during the Covid-19 pandemic is one indication of the government's success through the Government Purchase Price Control policy for grain or rice at the farmer level in accordance with the minister of trade regulation No. 24 years of 2020. It was also supported by the market intervention of Bulog Perum through the purchases of unhulled rice - the Availability of Supply and Price Stabilization policy (Agustian, 2020).

The average value of the coefficient of variation in the average retail price of cooking oil and granulated sugar indicates a statistically significant difference in the price of cooking oil and sugar in the period before and during the Covid-19 pandemic. The coefficient of variation values of 8.66 percent and 8.22 percent in the Q1/2020 - Q4/2021 period indicate a fairly high price fluctuation. It was above the highest retail price in 2020 at Rp. 11,000/L (Ministry of Trade, 2020), implying a high trading margin on cooking oil sales. The shortage in the domestic production and imports of these commodities have triggered prices to be volatile during the Covid-19 pandemic (Ministry of Agriculture, 2021).

3.2 Model selection

From Table 3, we show the model selection results for estimating the price of agricultural strategic food commodities (PASC) and the price of industrial strategic food commodities (PISC). Chow's test results suggest that at the 5% significance level we can reject the null hypothesis of Common Effect Model, and hence accept the Fixed Effect Model (FEM). However, the Hausman test results suggest that we reject the null hypothesis of FEM against the alternative the Random Effect Model (REM) model, and therefore we select the latter. Furthermore, the results of the Breush Pagan Lagrange Multiplier test suggest that we should select the REM against the CEM. By the same token, the selected model for the price of strategic food commodities in the industrial sector (PISC) is the REM.

Vol. 6, No.08; 2022

ISSN: 2456-7760

	Model PASC		Model PISC	
Test Step	Probability	Test	Probability	Test
		Conclusion		Conclusion
1. Chow's test (CEM vs FEM)	0,0000	FEM	0,0000	FEM
2. Hausman's test (REM vs	1,0000	REM	0,7663	REM
FEM)				
3. Breush Pagan Lagrange	0,0000	REM	0,0000	REM
Multiplier test (CEM vs REM)				
Best Model	REM		REM	

Table 3. Results of Model Selection

3.3 Prices of agricultural strategic food commodities (PASC)

In Table 4 we show the results of the regression prices of agricultural strategic food commodities (PASC). on log of GRDP and Covid-19 dummy suggest that:

Variable	Coefficient	Std. Error	t-Statistics	Probabilit
				у
С	0.95599	0.249161	43.97152	0.0000*
LGRDP	-0.013066	0.014220	-0.918847	0.3586
DCov	0.025429	0.006599	3.853532	0.0001*
R-Squared	0.026525		F-Stat.	7.370597
Adj, R-Squared	0.022926		Prob(F-stat.)	0.000695
Equation model	$LPASC_{i,t} = 10.95599 - 0.013066LGRDP_{i,t} + 0.025429DCov_{i,t}$			

*=*significant at* α = 5%

GRDP statistically has no significant effect on the average price of strategic agricultural food commodities. However, the Covid-19 pandemic dummy positively affects the average price of agricultural strategic food commodities. It is in line with the results of some previous (Jaravel & O'Connell, 2020), (Cariappa et al., 2021), (Singh et al., 2020), and (Borgards et al., 2021).

The increase in agricultural food commodity prices is attributable to disruptions in food supply chain from the production to consumption stages. Producers, including farmers, face difficulties acquiring raw material, especially in regions that have been infected with Covid-19. Disruptions in the production process cause commodity prices to rise when demand increases, especially egg prices. As a result of people movement restrictions and the tendency of people to avoid crowds lead to a shift from directly coming the sellers to indirect purchases, for example, through the internet (Kementerian Perdagangan, 2020a).

3.4 Prices of industrial strategic food commodities (PISC)

In Table 5, we show the results of estimation of the prices of industrial strategic food commodities (PISC).

Vol. 6, No.08; 2022

ISSN: 2456-7760

Variable		Coefficient	Std. Error	t-Statistics	Probability
С		9.880553	0.130933	75.46240	0.0000*
LPDRB		-0.023497	0.007471	-3.144881	0.0018*
DCov		0.063697	0.002480	25.68555	0.0000*
R-Squared		0.549765		F-Stat.	330.2979
Adj,	R-	0.548101		Prob(F-	0.000000
Squared				stat.)	
Equation		$LPISC_{i,t} = 9.880553 - 0.023497 LGRDP_{i,t} + 0.063697 DCov_{i,t}$			
model					

Table 5	Result	of Model PISC
I auto 0.5	Result	

*=*significant at* α = 5%

GRDP statistically has a significant negative effect on the average price of strategic food commodities in the industrial group. The GRDP coefficient value of minus 0.023497 means that a one percent increase in GRDP leads to a fall in the average price of industrial strategic food commodities by 0.02 percent, which is very small. The decline in the price of industrial sector food commodities can be attributable to a decrease in the purchasing power due to reduced income. The latter occurs because a number of businesses close and as a result of movement restrictions, unemployment rises.

The government carried out fiscal stimulus during the Covid-19 pandemic by providing cash transfers for the Family Hope Program recipients as well as granting food stamps, preemployment cards, electricity cost discounts for 450 VA and 900VA customers, open market operations and government budget efficiency measures. The constant indicates that the average price of strategic food commodities in the industrial category, implying that the prices increased by 0.063697 percent - the coefficient of Covid-19 outbreak dummy. The positive impact on the price of industrial-category strategic food commodities is in line with the results of research (Jaravel & O'Connell, 2020), (Cariappa et al., 2021), (Singh et al., 2020). Like the effects on the prices of agricultural category strategic food commodities The increase in commodity prices is due to significant changes in logistics distribution patterns from producers and distributors to consumers. There are restrictions on access to logistic distribution transportation which is closely related to the mobilization of logistic service providers ranging from shipping activities, storage of goods, from producers, distributors, retailers to consumers. The entire logistic distribution process is closely related to high social interaction, which to some degree. With the policy of limiting social movements, the impact of hampering the distribution of logistics so that such commodities do not follow the rising the rising prices in general.

The result of the coefficient of variation analysis (Table 1 and Table 2) shows the price volatility of strategic commodities in agricultural and industrial sectors during 2018Q1 to 2021Q4 research period. Volatility of strategic food commodity prices during pandemic is greater than before Covid-19 pandemic. This is in line with results of Random Effect Model (Table 4 and Table 5), that Covid-19 pandemic has a positive effect on the average price of strategic food commodities in agricultural and industrial sectors. The results of thus study prove that Covid-19 pandemic has

Vol. 6, No.08; 2022

a positive effect on the prices of strategic food commodities in Indonesia and is in accordance with the research hypothesis.

4. Conclusion

This study aims to examine volatility of strategic food commodity prices in Indonesia before and after the outbreak of Covid-19 pandemic. GRDP and the Covid-19 pandemic dummy variable were used to estimate the effects of the two variables on strategic food commodity prices in Indonesia. The results show that in general, most prices of strategic food commodities in Indonesia fluctuate during the 2018Q1-2021Q4 period. Exceptions are for the prices of rice which show a steady price trend.

In the sector of strategic agricultural food commodities, the coefficients of variations are statistically different, changing from before to after the pandemic. It implies that the prices, for example, of garlic, red pepper, and chicken meat, are more varied before the Covid-19 pandemic than after. Meanwhile, the prices of cayenne pepper, onions, beef, and chicken eggs is more varied after the Covid-19 pandemic than before.

The coefficient of variation value of industrial sector strategic food commodity prices shows fluctuations in the price of industrial sector strategic food commodities before and during the Covid-19 pandemic. Fluctuations in rice prices were more varied before the Covid-19 pandemic than during the Covid-19 pandemic but statistically did not show a noticeable difference or it can be said that rice prices are not volatile. Unlike the prices of cooking oil and granulated sugar which are more varied during the Covid-19 pandemic than before the Covid-19 pandemic and have a noticeable difference.

The results of the panel's data regression, it was found that the Covid-19 pandemic had a positive influence on the price of strategic food commodities in the agricultural and industrial sectors in Indonesia. GRDP has a negative effect on the price of strategic food commodities in the industrial sector. This happened because of various policy restrictions on movement during the Covid-19 pandemic so that there was a disruption of the distribution of goods. From the overall relationship of strategic food commodity prices, the Covid-19 pandemic and GRDP, it can be seen that only rice prices are stable and controlled during the Covid-19 pandemic. This is the result of the government's commitment in maintaining the stability of rice prices from before the Covid-19 pandemic, while other commodities are still poorly controlled. The government should continue to conduct strict supervision of the availability of strategic food commodities stocks that exist in the midst of economic uncertainty that is not necessarily when it ends so that the whole community can meet the essential needs of their lives. In addition, the government should maintain the availability of these strategic food commodities by optimizing goods from within the country to encourage domestic production rather than increasing the number of foreign imports and facilitating the ease of community reach to obtain these commodities. This research is expected to be one of the literature that can be used in future research in examining the impact of disasters such as Covid-19 on strategic food commodity prices as an evaluation of the government in maintaining the stability of strategic food commodity prices in Indonesia.

Vol. 6, No.08; 2022

ISSN: 2456-7760

References

- Agustian, A. (2020). Strategi Stabilisasi Harga Pangan Pokok Pada Era Pandemi Covid-19. *Pusat Sosial Ekonomi Dan Kebijakan Pertanian*, *3*, 389–390.
- Baltagi, B. H. (2005). *Econometric Analysis of Panel Data, Third Edition*. John Wiley & Sons Ltd.
- Bappenas. (2020). Lampiran Pidato Presiden Republik Indonesia 2020.
- Beckman, J., Baquedano, F., & Countryman, A. (2021). The impacts of COVID-19 on GDP, food prices, and food security. *Q Open*, *1*(1), 1–17. https://doi.org/10.1093/qopen/qoab005
- Borgards, O., Czudaj, R. L., & Hoang, T. H. Van. (2021). Price overreactions in the commodity futures market: An intraday analysis of the Covid-19 pandemic impact. *Resources Policy*, 71(October 2020), 101966. https://doi.org/10.1016/j.resourpol.2020.101966
- BPS. (2019). Disagregasi Inflasi Core, Volatile, dan Administered Prices (Berdasarkan Survei Biaya Hidup 2018). In *Badan Pusat Statistik*. Badan Pusat Statistik.
- BPS. (2021a). *Produksi Tanaman Sayuran*. https://bps.go.id/indicator/55/61/1/produksi-tanaman-sayuran.html
- BPS. (2021b). *Rata-Rata Konsumsi per Kapita Seminggu Beberapa Macam Bahan Makanan Penting,* 2007-2021. https://www.bps.go.id/statictable/2014/09/08/950/rata-rata-konsumsi-per-kapita-seminggu-beberapa-macam-bahan-makanan-penting-2007-2021.html
- BPS. (2022a). *Growth Rate of GDP 2010 Version*, 2011-2022. https://bps.go.id/indicator/11/104/3/-2010-version-growth-rate-of-gdp-2010-version.html
- BPS. (2022b). Indeks Harga Konsumen dan Inflasi Bulanan Indonesia. https://www.bps.go.id/statictable/2009/06/15/907/indeks-harga-konsumen-dan-inflasibulanan-indonesia-2006-2022.html
- BPS. (2022c). Indeks Harga Konsumen Menurut Kelompok Pengeluaran. https://www.bps.go.id/statictable/2020/04/14/2090/indeks-harga-konsumen-menurutkelompok-pengeluaran-2020-2022.html
- BPS. (2022d). *Laju Pertumbuhan PDB Seri 2010 (Persen)*. https://bps.go.id/indicator/11/104/1/-seri-2010-laju-pertumbuhan-pdb-seri-2010.html
- BPS. (2022e). *PDB Seri 2010 (Milyar Rupiah)*. https://bps.go.id/indicator/11/65/1/-seri-2010-pdb-seri-2010.html
- Cariappa, A. A., Acharya, K. K., Adhav, C. A., Sendhil, R., & Ramasundaram, P. (2021). COVID-19 induced lockdown effects on agricultural commodity prices and consumer behaviour in India – Implications for food loss and waste management. *Socio-Economic Planning Sciences*, 0(September), 101160. https://doi.org/10.1016/j.seps.2021.101160
- Guru, R. (2022). *Pengertian Komoditas Strategis*. https://roboguru.ruangguru.com/question/apayang-dimaksud-dengan-barang-komoditas-strategis-_QU-H8M9OTXX

Vol. 6, No.08; 2022

ISSN: 2456-7760

International Monetary Fund. (2022). World Economic Outlook. *World Economic and Financial Surveys.*, *Jan 2022*(January 2022), International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2012/02/pdf/text.pdf

Jaravel, X., & O'Connell, M. (2020). Real-time price indices: Inflation spike and falling product variety during the Great Lockdown. *Journal of Public Economics*, 191. https://doi.org/10.1016/j.jpubeco.2020.104270

Kementerian Kesehatan. (2021). Peta Sebaran Covid-19 Indonesia. https://covid19.go.id/peta-sebaran

- Kementerian Perdagangan. (2020a). Laporan Akhir Analisis Dampak Pandemi Covid-19 Terhadap Ketersediaan Pangan Nasional.
- Kementerian Perdagangan. (2020b). Peraturan Menteri Perdagangan Republik Indonesia Nomor 07 Tahun 2020 Tentang Harga Acuan Pembelian di Tingkat Petani dan Harga Acuan Penjualan di Tingkat Konsumen. 3, 151–156.

Kementerian Pertanian. (2020). Laporan tahunan badan ketahanan pangan tahun 2019.

Kementerian Pertanian. (2021). Laporan Kinerja Kementerian Pertanian Tahun 2020.

- Mahdi, M., & Khaddafi, M. (2020). The Influence of Gross Profit Margin, Operating Profit Margin and Net Profit Margin on the Stock Price of Consumer Good Industry in the Indonesia Stock Exchange on 2012-2014. *International Journal of Business, Economics,* and Social Development, 1(3), 153–163. https://doi.org/10.46336/ijbesd.v1i3.53
- Medah, M. (2020). Analisis Stabilitas Harga Beras Di Kota Kupang. Partner, 25(1), 1160. https://doi.org/10.35726/jp.v25i1.406
- Nau. (2014). The logarithm transformation. https://people.duke.edu/~rnau/411log.htm
- Nendissa, D. R., Olviana, T., & Kapioru, C. (2020). the Impact of the Covid-19 Pandemic on Price Disparities and Fluctuations of Shallots in Traditional Markets. *Russian Journal of Agricultural and Socio-Economic Sciences*, 103(7), 113–119. https://doi.org/10.18551/rjoas.2020-07.14
- PIHPS. (2022). Penjelasan Indikator, Data dan Informasi PIHPS Nasional. https://hargapangan.id/informasi/faq
- Pindyck, R. S. and D. L. R. (2013). Microeconomics, Eighth Edition.
- Prasetyo, A. (2019). *Pemerintah Tetapkan HET Bawang Putih*. https://mediaindonesia.com/ekonomi/234788/pemerintah-tetapkan-het-bawang-putih
- Pricilia, A. A. (2021). Analisis Dampak Covid-19 Terhadap VolatilitasPangan Strategis Di Daerah IstimewaYogyakarta Tahun 2019 2020.
- Rahayu, N. T., & Muharam, H. (2021). The Impact of The Covid-19 Pandemic on Provincial Economic Performance in Indonesia. *Management Analysis Journal*, 10(1), 23–36. https://doi.org/10.15294/maj.v10i1.43950
- Rahmanta, R., & Maryunianta, Y. (2020). Pengaruh Harga Komoditi Pangan Terhadap Inflasi Di Kota Medan. *Jurnal Agrica*, *13*(1), 35–44. https://doi.org/10.31289/agrica.v13i1.3121

Vol. 6, No.08; 2022

ISSN: 2456-7760

- Setiawan, A. (2012). Perbandingan Koefisien Variasi Antara 2 Sampel Dengan Metode Bootstrap. *D'CARTESIAN*, 1(1), 18. https://doi.org/10.35799/dc.1.1.2012.531
- Singh, S., Nourozi, S., Acharya, L., & Thapa, S. (2020). Estimating the potential effects of COVID-19 pandemic on food commodity prices and nutrition security in Nepal. *Journal* of Nutritional Science. https://doi.org/10.1017/jns.2020.43
- Sumaryono. (2009). KOMODITAS PANGAN UTAMA DENGAN MODEL ARCH / GARCH Retail Price Volatility Analyzes of Some Food Commodities Using Arch / Garch Model. *Jae*, 27(2), 135–163.
- Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences, 3(2), 1147–1156. https://doi.org/10.33258/birci.v3i2.954
- Umar, Z., Gubareva, M., & Teplova, T. (2021). The impact of Covid-19 on commodity markets volatility: Analyzing time-frequency relations between commodity prices and coronavirus panic levels. *Resources Policy*, 73(May), 102164. https://doi.org/10.1016/j.resourpol.2021.102164
- von Braun, J., & Tadesse, G. (2012). Global Food Price Volatility and Spikes: An Overview of Costs, Causes, and Solutions. ZEF- Discussion Papers on Development Policy, 161. https://doi.org/10.22004/ag.econ.120021
- World Bank. (2020). A shock like no other: The impact of COVID-19 on commodity markets. *Commodity Market Outlook, A Special Focus, April,* 193. https://openknowledge.worldbank.org/handle/10986/33624
- Wulandari, S. A. (2020). Fluktuasi Harga Cabai Merah Di Masa Pandemi Covid 19 di Kota Jambi. Jurnal MeA (Media Agribisnis), 5(2), 112–120. https://doi.org/10.33087/mea.v5i2.82
- ZAHRATURRAHMI, Z., DEMIRCAN, V., MORARU, R. A., & BODESCU, D. (2021). Analysis of the Effect of the COVID-19 Pandemic on the Prices of Basic Food Sold in Traditional Markets: The Case of Jakarta Province, Indonesia. *Horticultural Studies*, 38, 116–124. https://doi.org/10.16882/hortis.1012446